CLAIMS

1. A method for determining a surface illuminated by incident light by recording the intensity ($I_1(x,y)$) in light reflected from the surface in a first image thereof and by recording the intensity ($I_2(x,y)$) in light reflected from the surface in a second image thereof, taken with another angle of illumination and complementary to the first image, characterised by

recording the intensity of only diffusely reflected light over the surface in the two images, and

determination of the difference between the recorded intensities of diffusely reflected light over the surface in the first and second images in order to obtain a representation that emphasises variations in gradient of the surface.

2. The method according to claim 1, characterised in that the difference is normalised in order to obtain an image that is reflectance-neutral and which represents variations in gradient, that is, a derivative of the height function of the surface.

3. Method according to claim 2, characterised in that the difference is normalised by division by a sum ($I_1(x,y)+I_2(x,y)$) of the recorded intensities of the surface.

4. The method according to [some] claim 3, characterised in that the sum ($I_1(x,y)+I_2(x,y)$) of the recorded intensities over the surface is used to obtain an essentially topographically neutral reflectance image of the surface.

5. The method according to any of the previous claims, characterised in that the intensity of the first image is recorded with light incident from a first direction and that the intensity of the second image is recorded with light incident from a second direction that is opposite to the reflection angle of the first direction.

6. The method according to any of the previous claims, characterised by calculation of the derivative of the area by

$$f'_x(x,y) \approx \frac{1}{\tan\gamma} \cdot \frac{I_1(x,y) - I_2(x,y)}{I_1(x,y) + I_2(x,y)}$$

where γ is the angle of incidence of the light.

7. The method according to claim 6, characterised by Fourier transformation of the derivative and multiplication thereof by a Wiener filter in order to suppress noise in the recorded intensities.

8. The method according to claim 6 or 7, characterised by integration of the derivative in order to obtain the height function of the surface.

9. The method according to any of the preceding claims, characterised by polarisation of the incident light and thereto crosswise polarisation of the reflected light in order to eliminate reflections in the surface and obtain the said diffusely reflected light.

10. The method according to any of the preceding claims, characterised in that the first image is recorded with light in a first wavelength region and that the second image is recorded with light in a second wavelength region, distinct from the first wavelength region.

11. The method according to claim 10, characterised in that the first image is recorded by illumination with light of a first frequency and that the second image is recorded by illumination with light of a second frequency that deviates from the first frequency.

12. The method according to claim 10 or 11, characterised in that the first and the second images are recorded simultaneously.

13. Use of the method according to any of the preceding claims for determining the topography of a paper surface.
